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EXAMINER	
CHIEN, LUCY P	

ART UNIT	PAPER NUMBER
2871	

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12/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/799,396	RHEE ET AL.	
	Examiner	Art Unit	
	Lucy P. Chien	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-14 and 16-31* is/are pending in the application.

4a) Of the above claim(s) *8,9,11-14,21-28 and 31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-7,10,16-20,29 and 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/13/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1,4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al (US 6016178) in view of Morozumi (Re 33882)

Regarding Claim 1,4,

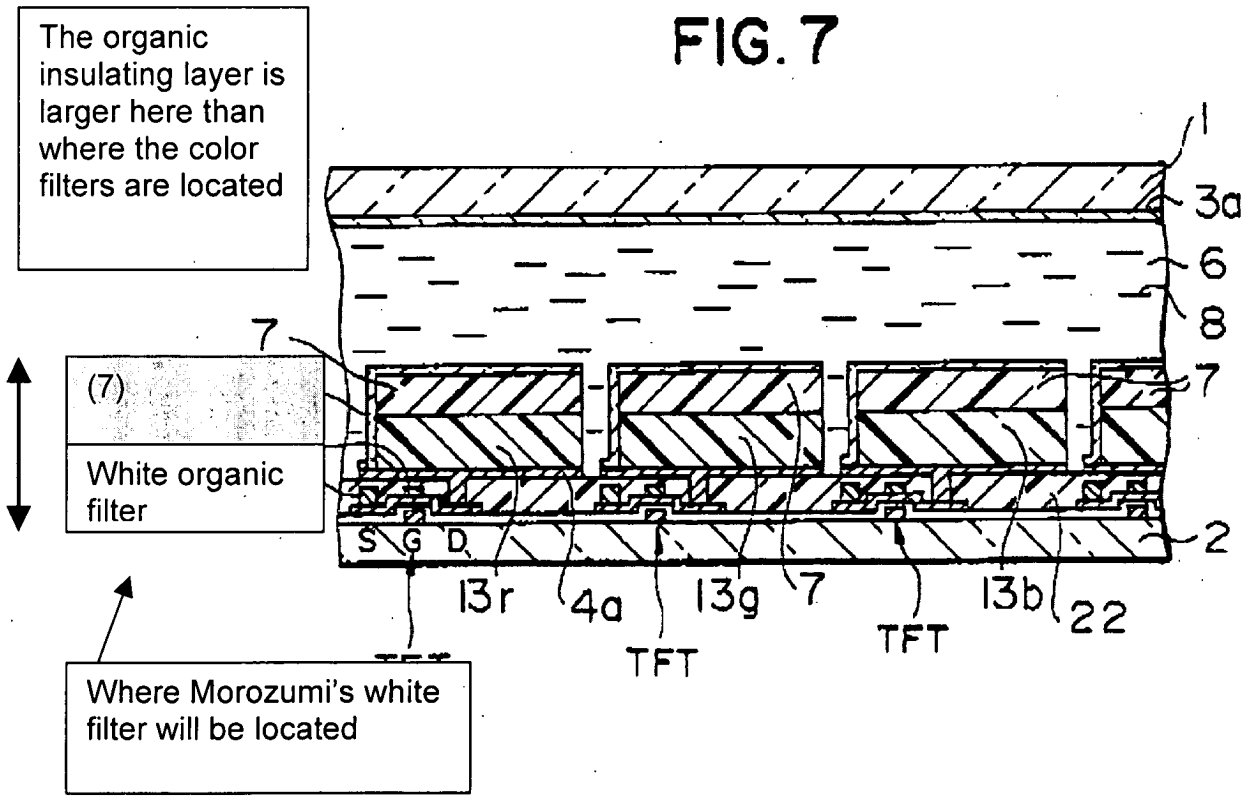
Kataoka et al teaches in Figure 17 an insulating substrate (2), a plurality of thin film transistors (TFT) formed on the substrate (2). A plurality of three primary color filters (13r,13g,13b) formed on the substrate (2). A plurality of first pixel electrodes (4b) formed on the color filters (13r,13g,13b) and connected to the thin film transistors (TFT) to complete a liquid crystal display with color filters.

Kataoka et al does not disclose the second pixel electrode on the substrate and an organic insulating layer including a plurality of first portions disposed between the color filters and the first pixel electrodes and a plurality of second portions disposed under the second pixel electrodes and having thickness larger than the first portions.

Morozumi discloses (Fig. 16) (column 10, row 48-60) the use of a second pixel electrode (associated with a white filter or transparent filter) used to brighten the display. When adding Morozumi's white filter (which is an organic insulating layer also) to Kataoka et al's display (Fig. 7) it will be manufactured the same and thus the organic

insulating layer (7) including a plurality of first portions disposed between the color filter (13r,13g,13b) and the first pixel electrode (4b) and a plurality of second portions (which is Morozumi's white organic insulating filter and the insulating layer (7) of Kataoka et al under the second pixel electrodes has a thickness larger than the first portions (7 shown above 13r,13g,13b)

It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Kataoka et al's color display device to include Morozumi's white filter and second pixel electrode to improve the overall brightness of the display (Column 10, Rows 54-60).



Claim 3,6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al (US 6016178) and of Morozumi (Re 33882) in view of Kadota et al (US 6031512).

Regarding Claim 3,6,

Kataoka et al and Morozumi discloses everything as disclosed above.

Kataoka et al and Morozumi does not disclose an inorganic insulating layer disposed between the color filters and the thin film transistors.

Kadota et al discloses (Figure 1) an inorganic insulating layer (5) disposed between the color filters (8.9,10) and the thin film transistors (TFT, 3) thereby providing the pixel electrode to electrically connect through the insulating layer to connect to the drain region (Column 1, rows 25-35).

It would have been obvious to one of ordinary skill in the art to modify Kataoka et al and Morozumi to include Kadota et al's inorganic insulating layer motivated by the desire to provide the pixel electrode to electrically connect through the insulating layer to connect to the drain region (Column 1, rows 25-35).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al (US 6016178) and of Morozumi (Re 33882) in view of Kawase (US 6787275).

Kataoka et al and Morozumi discloses everything as disclosed above.

Kataoka et al and Morozumi do not disclose the transparent filter being made of a transparent photosensitive material or acrylic material.

Kawase discloses (Column 23,Row 18-25) the transparent filter made of a transparent photosensitive material for excellent light transmittance.

It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Kataoka et al and Morozumi to include Kawase's transparent photosensitive material to display excellent transmittance of visible light. (Column 23,Row 18-25).

Claim 7,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al (US 6016178) and of Morozumi (Re 33882) in view of Sunohara et al (US 5587819).

Regarding Claim 7,

Kataoka et al and Morozumi discloses everything as disclosed above.

Kataoka et al and Morozumi do not disclose the first pixel electrode including third, fourth, and fifth pixel electrodes located under the red, green, and blue color filters.

Sunohara et al discloses in Fig. 28 the three major colors being red, blue, and green. The three colors located on top and three pixel electrodes located under it and the pixel electrodes are also arranged in a direction so the display can produce high-luminance colors (in Abstract).

It would have been obvious to one of ordinary skilled in the art to modify Kataoka et al and Morozumi to include Sunohara et al's first pixel electrode including third, fourth, and fifth pixel electrodes located under the red, green, and blue color filters to display a high-luminance color display (abstract).

Regarding Claim 10,

Kataoka et al and Morozumi do not disclose a 2x2 matrix having the pixel electrodes arranged in sequence as claimed.

Sunohara discloses in Figure 3, a 2x2 matrix having the first row including third (first pixel) and fourth pixel electrodes (third pixel) arranged in sequence and a second row including fifth (fifth pixel) and second pixel electrodes (second pixel) arranged in sequence to provide high luminance colors.

It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Kadota et al and Morozumi to include Sunohara et al's primary colors in the arranged order to provide high luminance colors (Column 34, Rows 41-55).

Claim 16,20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadota et al (US 6031512) and of Morozumi (Re 33882) and of Park et al (US20020074549) in view of Suzuki et al (US 6081309).

Regarding Claim 16,

Kadota et al discloses in Figure 1 a first substrate (20) A plurality of gate lines (3) formed on the first substrate (20). A gate insulating layer (4) formed on the gate lines (3); a semiconductor layer (2) formed on the gate insulating layer (4); a plurality of data lines (not shown, known existence) formed on the gate insulating layer (4) and intersecting the gate lines (3) to define a plurality of pixel areas; a first protective layer (5) formed on the data lines (not shown, known existence); a plurality of red (8), green (9), blue (10) color filters formed on the first protective layer (5). A second protective layer (11) formed on the color filters (8,9,10). A plurality of pixel electrodes (1) formed

on the second protective layer (11) and electrically connected (CON) to the gate lines (3) and data lines through the semiconductor layer (2). A second substrate (12) facing the first substrate (20). A common electrode (13) formed on the first substrate and a liquid crystal layer (shown between 13 and 1) interposed between the first substrate (20) and second substrate (20).

Kadota et al does not disclose an Ohmic contact layer nor does Kadota et al disclose the liquid crystal layer interposed between the first substrate and second substrate wherein the pixel areas include a plurality of transparent color filters and wherein the pixel electrodes formed on the blue filter or transparent filter has a smaller area than the pixel electrodes formed on the red or green filters.

Park et al (Page 5 Row [0097]) teaches the use of an Ohmic contact layer used to reduce contact resistance to provide better contact between semiconductors.

Morozumi discloses (column 10, row 48-60) that the use of transparent filters are used so that the overall brightness of the display can be improved.

Suzuki et al discloses (Fig. 4) wherein the pixel electrodes formed on the blue filter has a smaller area than the pixel electrodes formed on the red or green filters thus preventing a disturbance of color balance while retaining a high resolution and excellent color image qualities (abstract).

It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Kadota et al's color display device to include Morozumi's transparent filter and also to include Park et al's ohmic contact layer to provide excellent contact between semiconductors and to display excellent transmittance of visible light with white

filters to include Suzuki et al's pixel electrodes formed on the blue filter has a smaller area than the pixel electrodes formed on the red or green filters thus preventing a disturbance of color balance while retaining a high resolution and excellent color image qualities (abstract).

Regarding Claim 20,

In addition to Kadota et al, Morozumi, Park et al, and Suzuki et al as described above Kadota et al teaches (Column 4, Row 30-37) a black mask used as a light shielding layer.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kadota et al (US 6031512) and of Morozumi (Re 33882) and of Park et al (US20020074549) and of Suzuki et al (US 6081309) in view of Yamada (US 6798471).

Kadota et al, Morozumi Park et al, and Suzuki do not disclose the use of a vertical aligned liquid crystal.

Yamada discloses (Column 1, Rows 19-26) that the use of a vertically aligned liquid crystal provides higher contrast, higher response speed, and excellent viewing angle characteristics.

It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Kadota et al, Morozumi's, Park et al, and Suzuki to include Yamada's vertically aligned liquid crystal to provide excellent viewing angles for the display.

Claim 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadota et al (US 6031512) and of Morozumi (Re 33882) and of Park et al (US20020074549) and of Suzuki et al (US 6081309) and of Yamada (US 6798471) in view of Kim et al (US 20020145695).

Kadota et al, Morozumi, Park et al, Suzuki et al and Yamada do not disclose the use of protrusions formed on the common electrode and made of organic material, wherein the pixel electrodes have cutouts.

Kim et al discloses in FIG. 1E (page 3, [0044]) the common electrode 400, and the protrusion 412 is formed on the common electrode 400. The protrusion 412 is made of organic material used to form contacts between semiconductors. Fig. 3a shows arrangements of the same invention of the pixel electrode (90) cutouts corresponding to the common electrode (400). Which stabilize the electric field (Page 4, [0062]).

It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Kadota et al, Morozumi, Park et al, Suzuki and Yamada to include Kim et al's protrusions for better stabilization of the electric field (Page 4, [0062]).

Claim 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadota et al (US 6031512) and of Morozumi (Re 33882) and of Park et al (US20020074549) and of Suzuki et al (US 6081309) in view of Kawase (US 6787275).

Kadota et al, Morozumi, Park et al, and Suzuki et al do not disclose the liquid crystal layer having a twisted alignment.

Kawase discloses in Figure 40 (Column 26, Rows 54-60) having a twisted nematic liquid crystal serves as a transmission of light liquid crystal.

It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Kadota et al, Morozumi, Park et al, and Suzuki et al to include Kawase's twisted nematic liquid crystal to control the transmission of light. (Column 26, Rows 54-60)

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al (US 6016178) and of Morozumi (Re 33882) in view of Suzuki et al (US 6081309).

Kataoka et al and Morozumi discloses everything as disclosed above.

Kataoka et al and Morozumi does not disclose one of the first pixel electrodes formed on the blue one of the primary color filters has a smaller area than either of two of the first pixel electrodes formed on a red one or a green one of o the primary color filters.

Suzuki et al discloses (Fig. 4) wherein the pixel electrodes formed on the blue filter has a smaller area than the pixel electrodes formed on the red or green filters thus preventing a disturbance of color balance while retaining a high resolution and excellent color image qualities (abstract).

It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Kataoka et al and Morozumi's to include Suzuki et al's pixel electrodes formed on the blue filter has a smaller area than the pixel electrodes formed

on the red or green filters thus preventing a disturbance of color balance while retaining a high resolution and excellent color image qualities (abstract).

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al (US 6016178) and of Morozumi (Re 33882) in view of Abukawa et al (US 5642176).

Kataoka et al and Morozumi discloses everything as disclosed above.

Kataoka et al and Morozumi does not disclose the second pixel electrodes formed over a transparent filter and wherein the second pixel electrodes have a smaller area than either of two of the first pixel electrodes formed on the red or green one of the primary color filters.

Abukawa et al discloses (Fig. 3c) the second pixel electrodes formed over a transparent filter (11w) and wherein the second pixel electrodes have a smaller area than either of two of the first pixel electrodes formed on the red or green (2R,2G) one of the primary color filters to enhance the quality of a color display.

It would have been obvious to one of ordinary skill in the art to modify Kataoka et al and Morozumi to include Abukawa et al's the second pixel electrodes formed over a transparent filter (11w) and wherein the second pixel electrodes have a smaller area than either of two of the first pixel electrodes formed on the red or green (2R,2G) one of the primary color filters to enhance the quality of a color display (Column 2, rows 1-30).

Response to Arguments

Applicant's arguments filed 10/15/2007 have been fully considered but they are not persuasive.

Applicant's arguments on page 7 says "the phase shifter layer 7 I s not an organic insulating layer. The phase shifter layer 7 is formed from a polymer containing liquid crystal molecules." Is not persuasive. A polymer is organic. Even if it contains liquid crystal, its still an organic insulating layer.

Applicant's arguments that "..the overlying phase shifter layer 7 would be the same thickness portion of layer 7 over the RGB portions. Examiner is calling the plurality of second portions, which is Morozumi's white organic insulating filter ***and*** the insulating layer (7). Thus, the second portion (Morozumi's white organic insulating filter ***and*** the insulating layer (7)) disposed under the second pixel electrodes has a thickness larger than the first portion (portions located between COLOR (RGB) filter and pixel electrod).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy P. Chien whose telephone number is 571-272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lucy P Chien
Examiner
Art Unit 2871

ANDREW SCHECHTER
PRIMARY EXAMINER